

## Water Quality Permit for the Bella Terra Wastewater Treatment Plant

### WHAT IS AN AQUIFER PROTECTION PERMIT?

An Aquifer Protection Permit, or APP, is a water quality permit issued by ADEQ. An APP protects water quality by regulating the amount of discharge to groundwater allowed by a facility. In this case, the APP limits the daily discharges from the wastewater treatment plant to less than 25,000 gallons per day. An APP requires that new facilities use the best available demonstrated control technology, known as BADCT, to reduce or eliminate the discharge of pollutants to groundwater so that the pollutants do not cause or contribute to a violation of aquifer water quality standards. In Arizona, aquifer water quality standards are the same as drinking water standards. The Bella Terra APP prohibits discharge above the aquifer water quality standards for more than 40 pollutants. Moreover, the permit limits actual discharge to the sub-surface irrigation system to less than 15,000 gallons per day with a requirement to reuse any amount over 15,000 gallons per day.

### WHAT TYPE OF PLANT IN BEING PERMITTED?

The APP is being issued for a wastewater treatment plant in the Bella Terra subdivision near Sedona. The permit covers day-to-day operation, as well as closure and post-closure activities at the plant. The wastewater treatment plant will serve a maximum of 106 homes upon build-out of the subdivision. The plant will employ a “drip-style” system of discharge. Large, high-pressure flows from the system are not allowed under the permit.

### WHY IS THIS PLANT BEING ISSUED A PERMIT?

As approved by the Yavapai County Board of Supervisors in 2006, Bella Terra on Oak Creek is a proposed new subdivision consisting of 106 lots on 53.5 acres bordering Oak Creek and Carroll Canyon Wash. Bella Terra is proposing a wastewater treatment plant instead of installing septic tanks in order to better protect the aquifer and Oak Creek. Arizona law requires that sewage treatment facilities must operate under an APP. Based on the number of lots and occupancy figures, the treatment plant at build

out, or maximum capacity, will generate less than 25,000 gallons of treated wastewater per day. If the wastewater treatment plant was not built, up to 53 septic systems could be installed in the Bella Terra subdivision under applicable regulations. The treatment plant will produce one-third of the total nitrogen that would be produced by those septic systems and less than one-millionth of the bacteria, including E. Coli.

### HOW DOES THE PERMIT PROTECT OAK CREEK?

The subdivision borders Carroll Canyon Wash and Oak Creek, a “unique” Arizona surface water. Protection of water quality in Oak Creek is a top priority for ADEQ and as a unique water, Oak Creek is given the highest level of water quality protection. The permit forbids any discharge from the plant to Oak Creek and Carroll Canyon Wash. Any discharges to Oak Creek or Carroll Canyon Wash will violate the permit and subject Bella Terra’s developer to an enforcement action by ADEQ. This is the most protective APP ever issued by ADEQ for a plant of this size. Indeed, the effluent produced by the plant must meet the highest water quality standards possible, known as A+. To further protect Oak Creek and Carroll Canyon Wash from any impacts, a required monitoring well, known as a sentinel well, will provide an “early warning system” before any impacts to Oak Creek or Carroll Canyon Wash can occur.

### DOES THE DEVELOPER HAVE THE PROPER ZONING IN PLACE?

The development’s zoning and density were approved by the Yavapai County Board of Supervisors in 2006. ADEQ was not involved in the County’s zoning decision for the Bella Terra subdivision.

### WHAT TYPE OF PROCESSES WILL THE PLANT USE TO TREAT WASTEWATER?

Treatment at the plant includes equalization to distribute the flow for optimal treatment, denitrification, secondary clarification and tertiary filtration. In addition, the permit requires ultraviolet disinfection

instead of disinfection by chlorine to prevent production of by-products capable of impacting groundwater or Oak Creek and to eliminate any possibility of exposure to chlorine gas by community members.

### HOW MUCH FINANCIAL CAPABILITY WILL THE DEVELOPER DEMONSTRATE?

ADEQ has required the developer of Bella Terra on Oak Creek to demonstrate increased financial capability in the amount of \$600,000 to cover construction, operation, closure and proper post-closure care of the wastewater treatment plant.

### HOW IS THE PLANT MORE PROTECTIVE THAN SEPTIC SYSTEMS?

Septic systems use antiquated, 19th century treatment technologies. Wastewater enters the first chamber of a septic tank, allowing solids to settle and scum to float. Liquid waste flows through a dividing wall into a second chamber of the tank where further settlement takes place, with the excess liquid then draining from the outlet into the leach field. From the leach field, contaminants in the liquid waste seep into the soil and can negatively impact local groundwater. Septic systems do not treat wastewater or otherwise remove contaminants. In contrast, a wastewater treatment plant uses state-of-the-art technology to remove contaminants from wastewater resulting in far less nitrogen and bacteria in the environment than a septic system.

ADEQ estimates conservatively that if the wastewater treatment plant is not built, 53 septic systems would serve the homes as approved by the Yavapai County Board of Supervisors. Those septic systems would produce nearly three times as much total nitrogen and over one million times as much bacteria, including E. Coli, as the wastewater treatment plant.

### ADDITIONAL INFORMATION

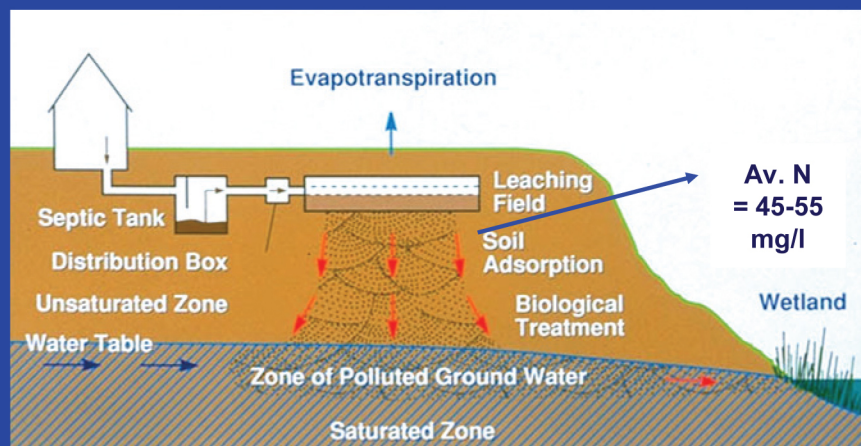
For more information regarding this permit, please contact:

Maribeth Greeslade  
ADEQ Groundwater Section  
1110 W. Washington St.  
Phoenix, AZ 85007  
(602) 771-4578 or  
Toll free at (800) 234-5677 Ext. 771-4578  
Hearing impaired persons please call  
ADEQ's TDD line: (602) 771-4829

Media outlets interested in additional information regarding this permit should contact:

Cortland Coleman  
ADEQ Office of Communications  
1110 W. Washington St.  
Phoenix, AZ 85007  
(602) 771-2215 or  
Toll-free: (800) 234-5677 Ext. 771-2215  
Hearing-impaired persons please call  
ADEQ's TDD line: (602) 771-4829

## Example: Septic Systems and Nitrogen and Viral Loading



**Septic Systems Do Not Treat Wastewater**